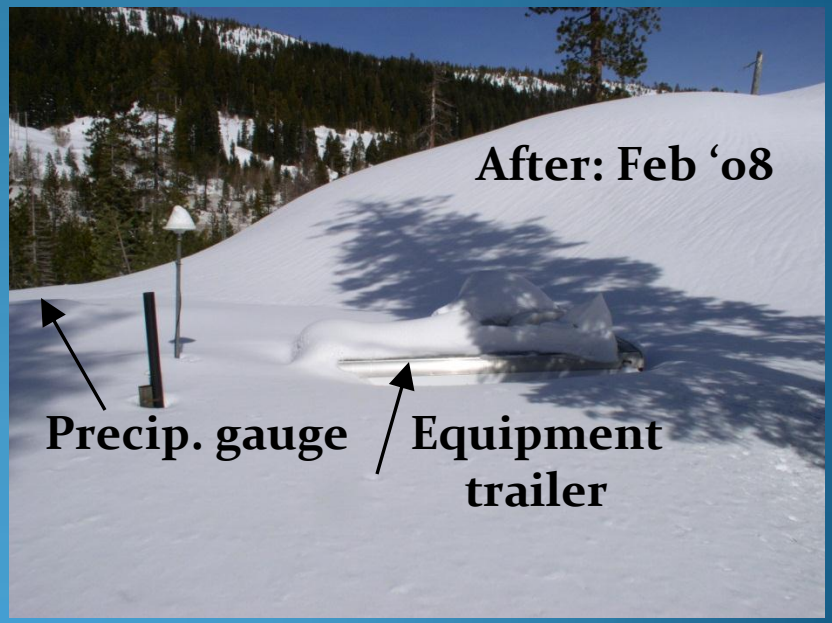
HMT MAA: Snow Information

Allen White (ESRL/PSD) and Art Henkel (NWS) – Activity Area Co-leads
Other team members: Tim Coleman, Dan Gottas, Lynn Johnson, Paul Johnston, Clark King, Paul Neiman, and Ed Tollerud

Major sub-themes in this activity:

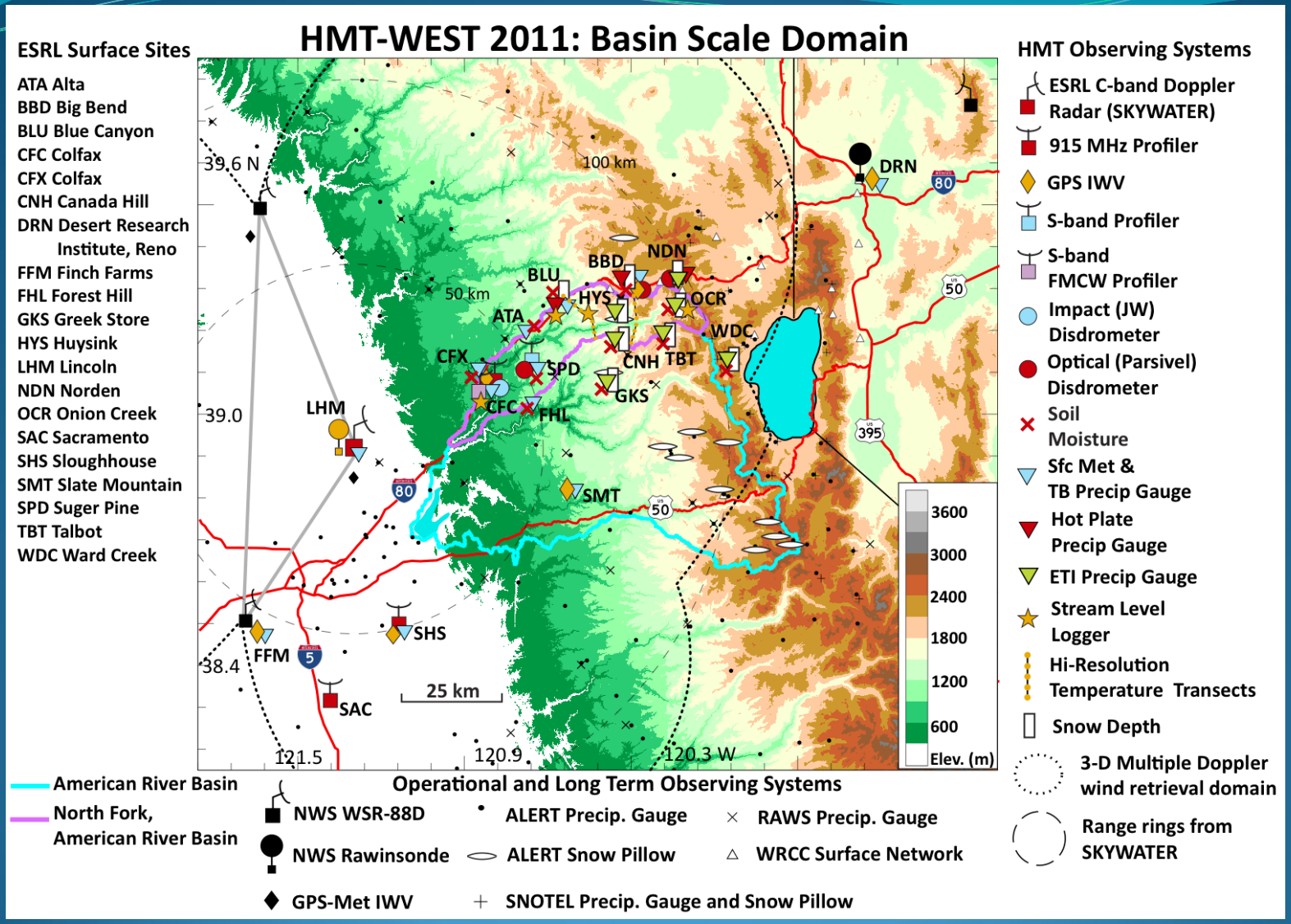
- Snow Depth and Snow Information
- Snow Level and Freezing Level Observations



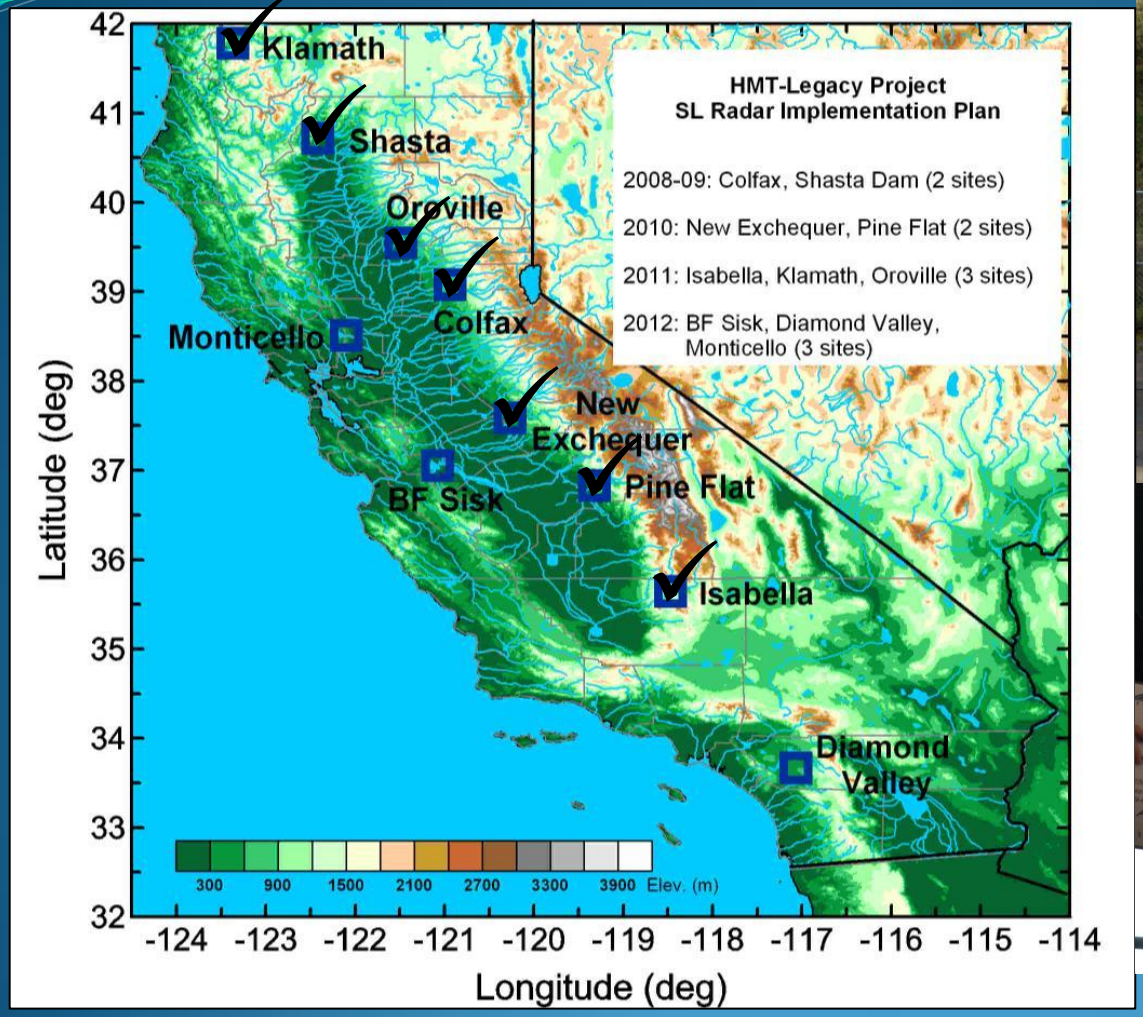
Snow Information: FY12 Accomplishments

- Continued operation and maintenance of HMT snow and precipitation gauge network in the American River Basin
- Expansion of the HMT Legacy Snow-level Radar network in California to seven sites
- New displays of snow-level observations along the Sierra Nevada and from the coast across the Central Valley to the Sierra
- SPD snow-level "super site" with camera, S-PROF, and optical disdrometer
- BAMS publication on NOAA's rapid response to the Howard Hanson Dam flood risk management crisis highlights use of snow-level observations in NWS forecast operations
- Washington snow-level forecast performance analysis report
- NWS-formatted (SHEF-encoded) freezing level, precip. accumulation, and sfc. met. data from HMT Legacy network distributed to Weather and River Forecast Offices through NWS Western Region Headquarters
- Outreach to expand SLR network to the Pacific Northwest (meeting with Seattle PUC) and throughout the intermountain West (Western Water Association)

HMT Instrumentation in the North Fork of the American River Basin



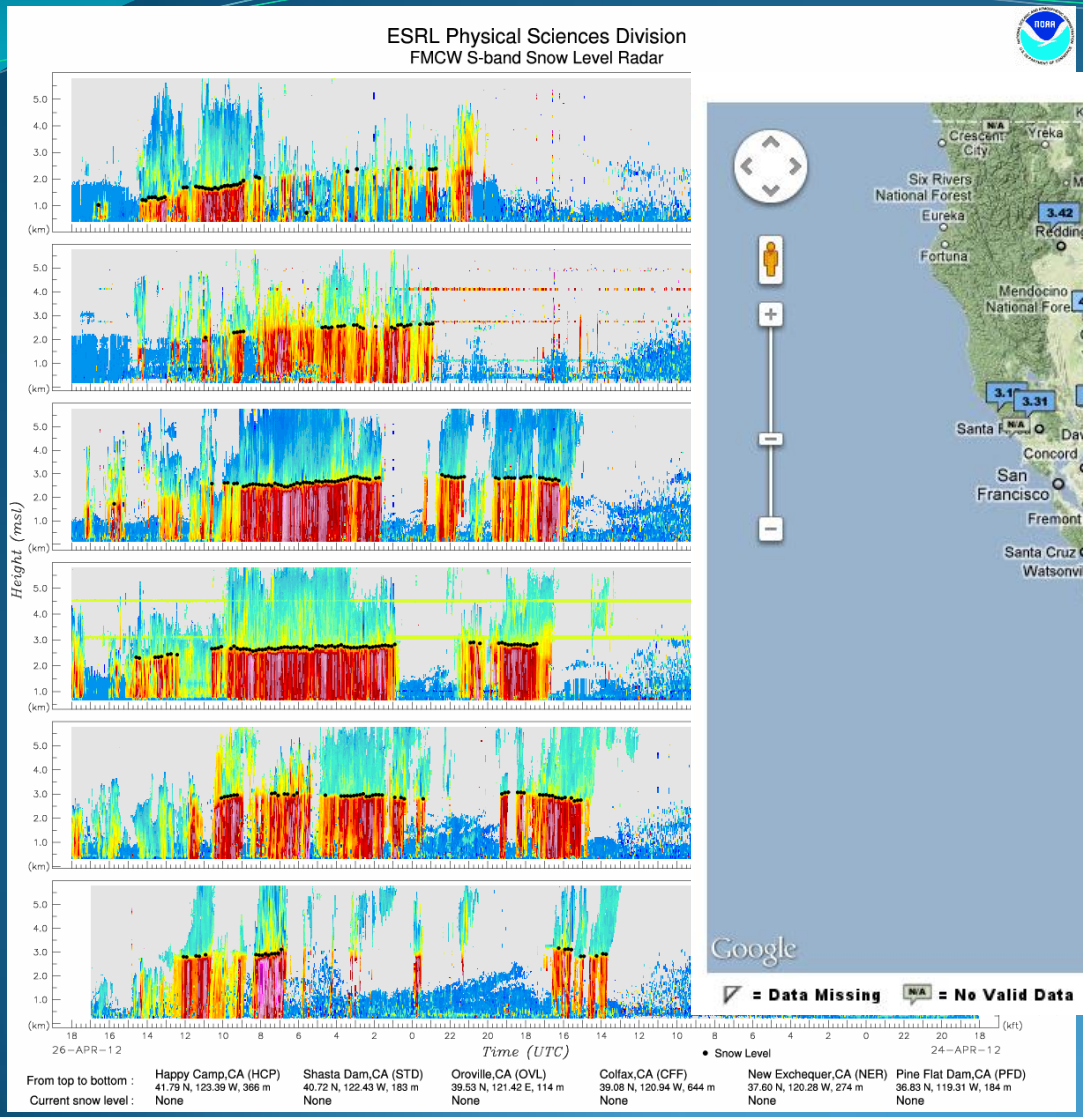
HMT-Legacy Project: Snow-level Radar Network

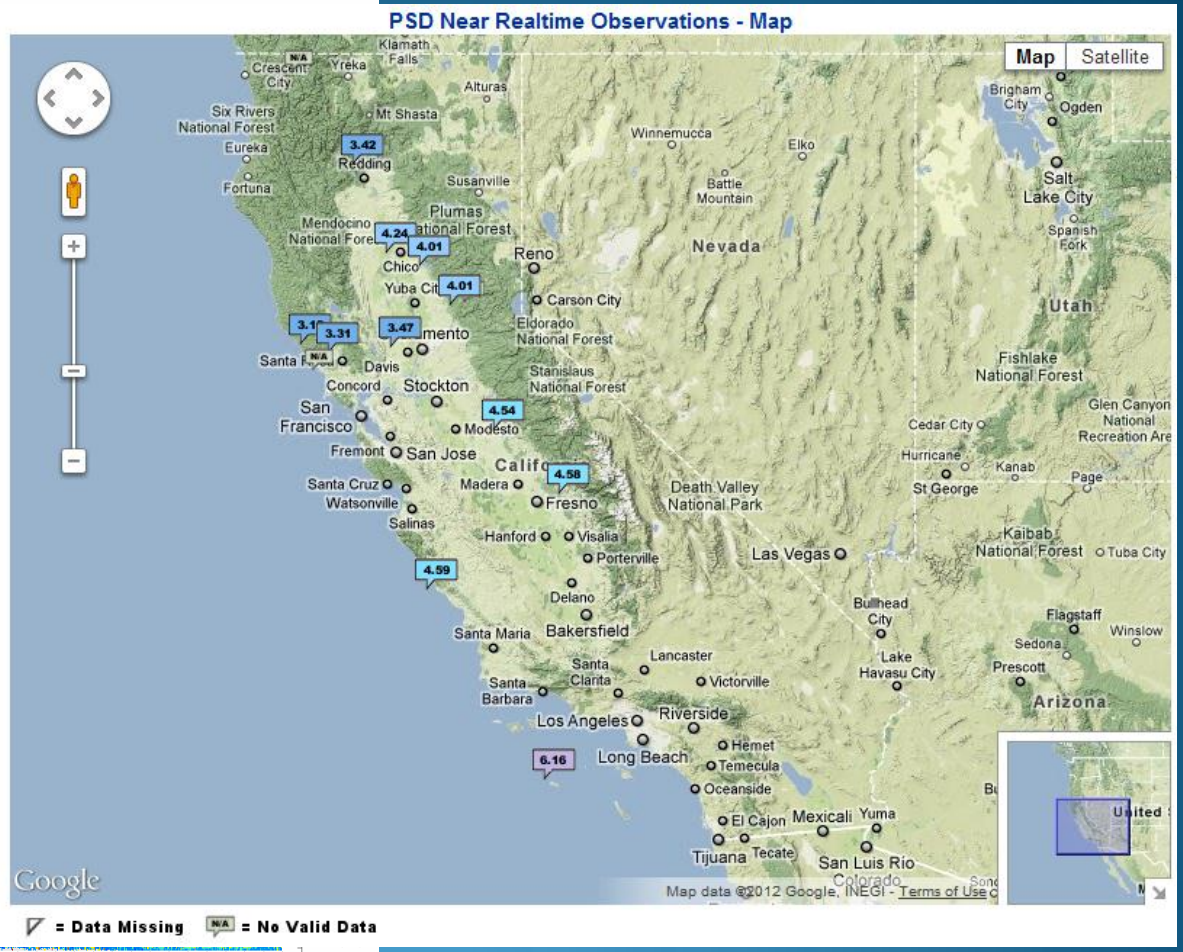



Snow-level radar at Pine Flat Dam

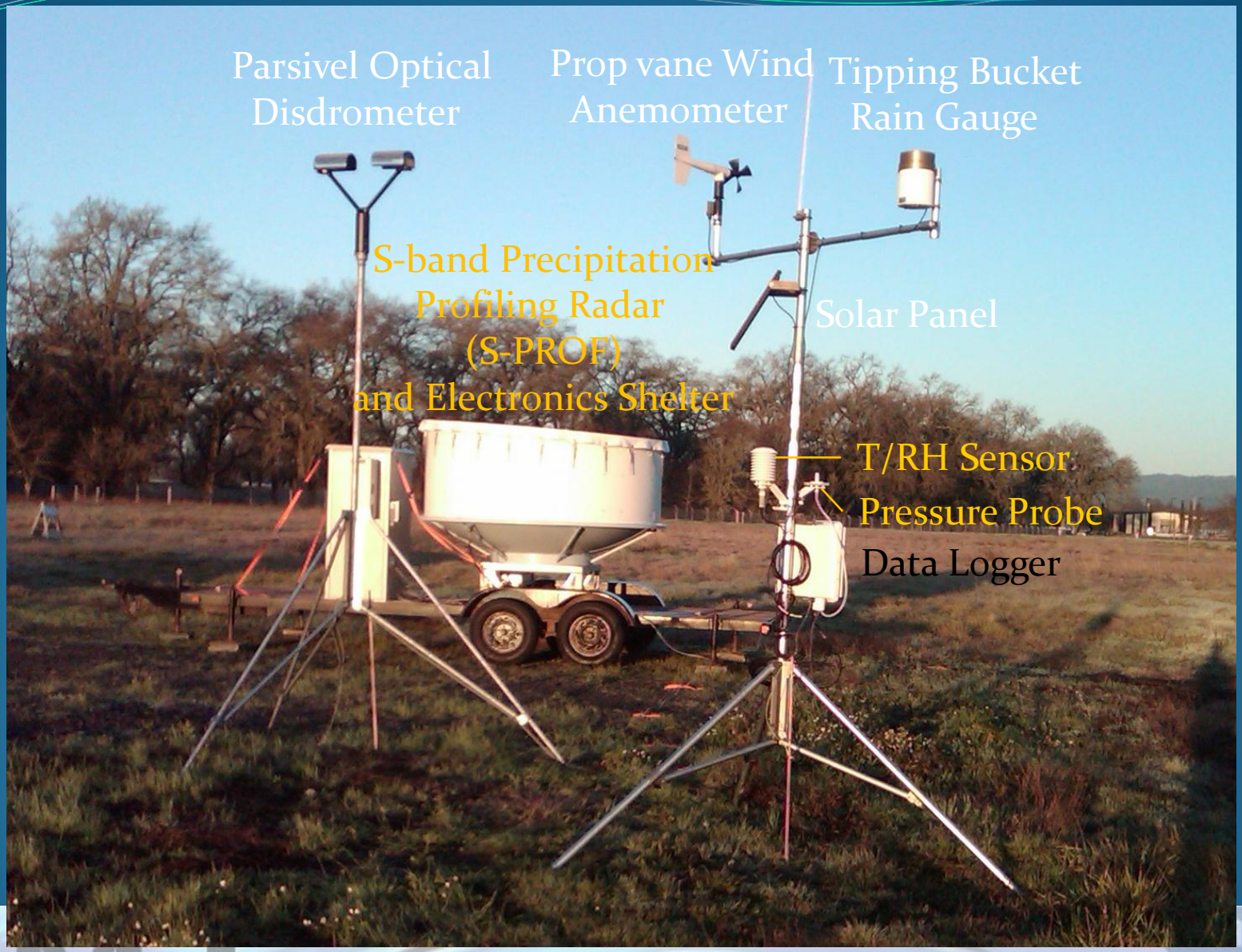
SLR developers P. Johnston, D. Costa, and D. Carter win 2011 CIRES Annual Award

HMT Snow-level Radar Network Displays

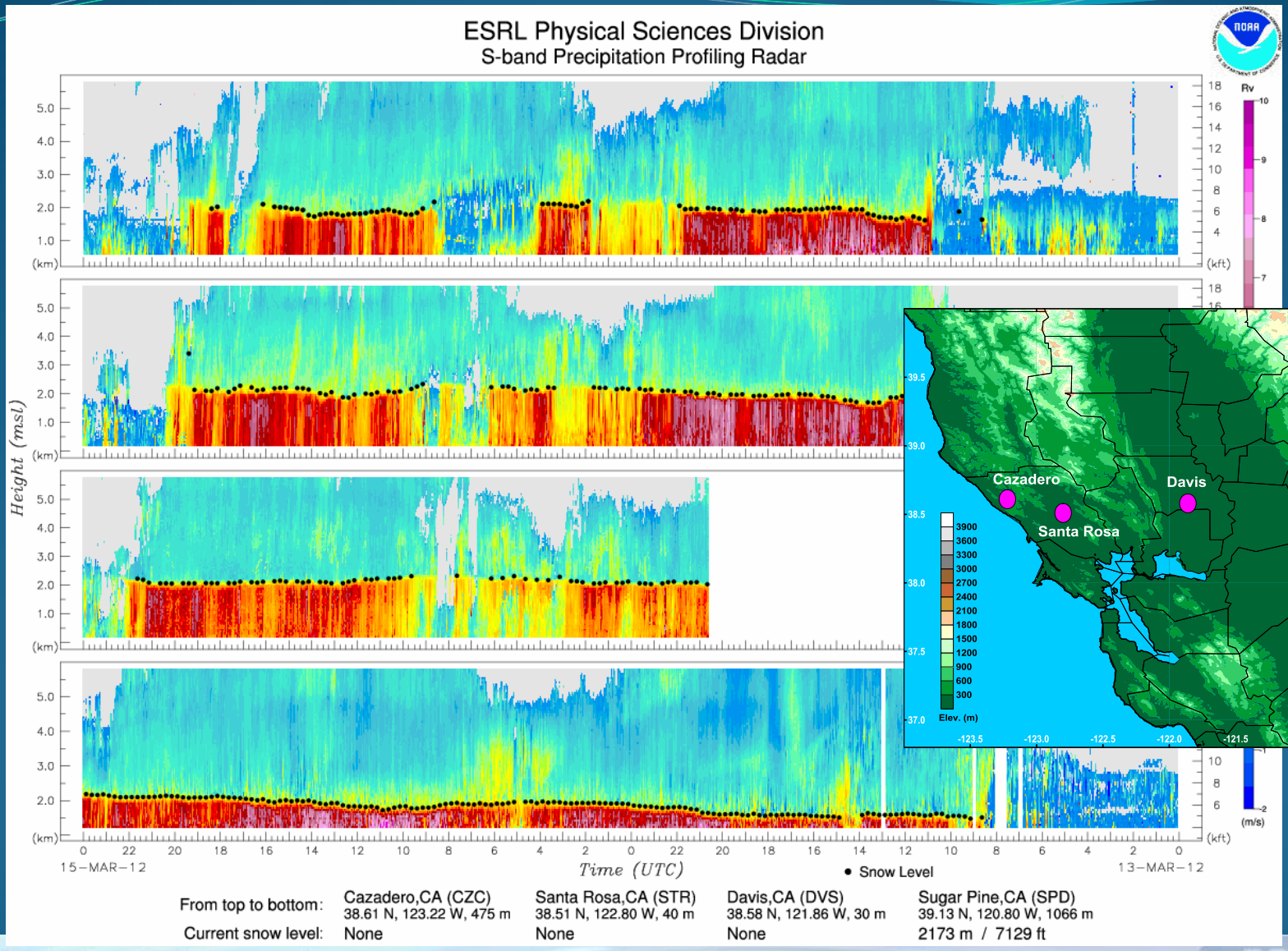




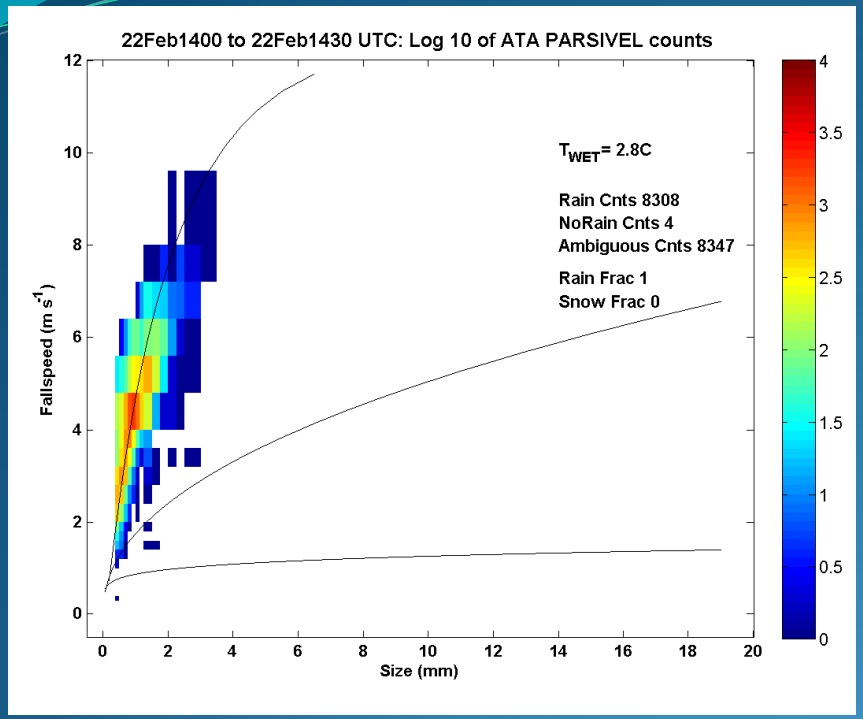
S-PROFs deployed at Santa Rosa and Davis for SCWA QPI project



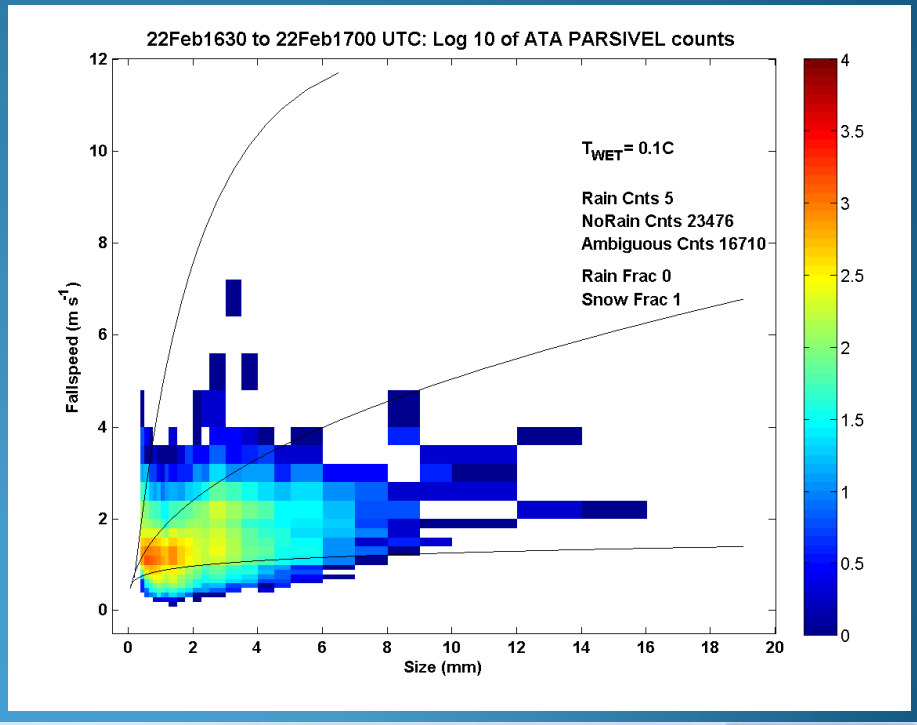
S-PROF Cross-section Display from the Coast to the Sierra



How an Optical Disdrometer Distinguishes Precip. Type

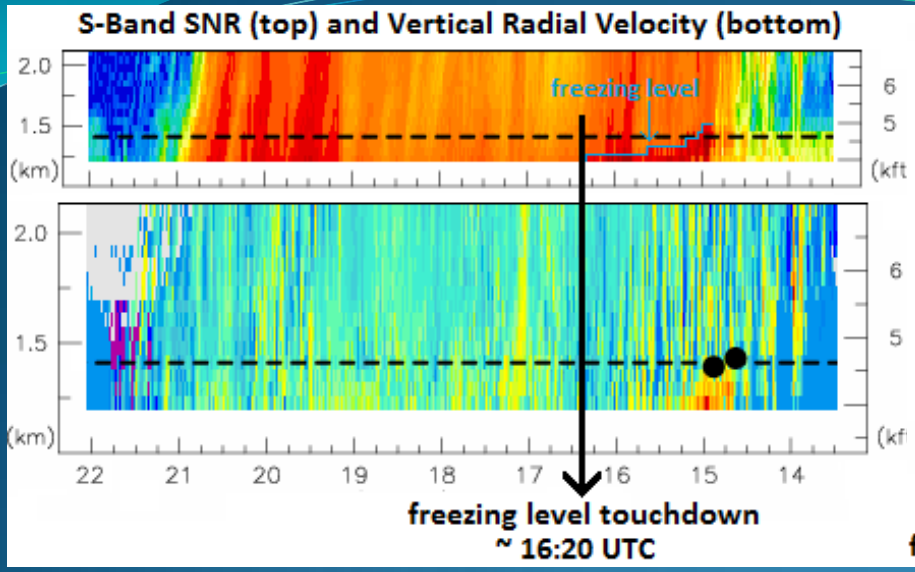


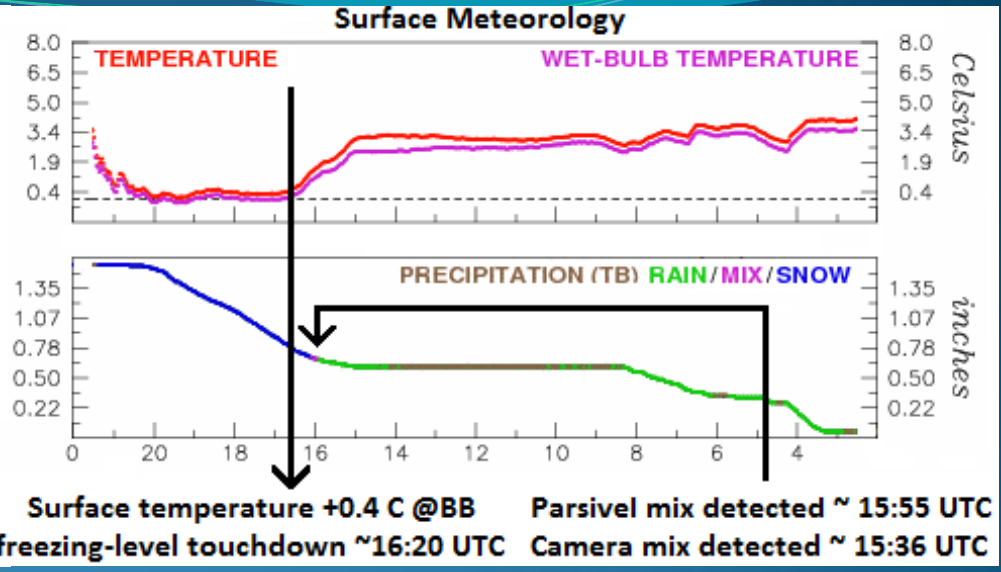
Rain has a fairly narrow size distribution, but the fall velocity is highly dependent upon the size of the drops.

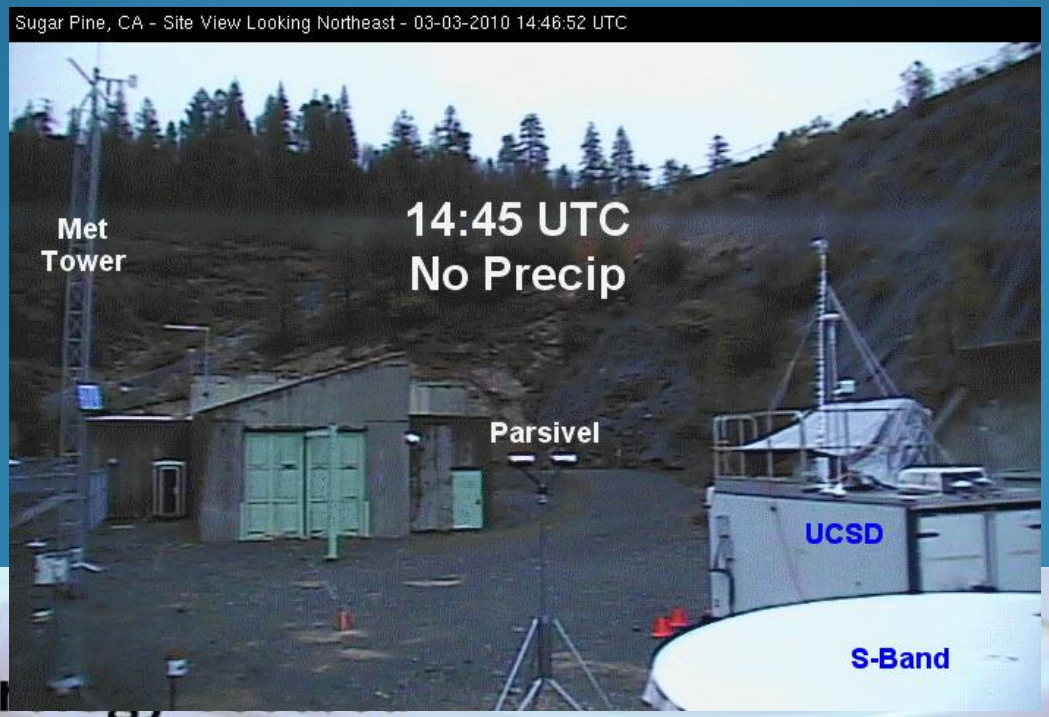


Snow has a much wider size distribution with a narrower range of fall velocities.

Sugar Pine Dam (SPD) Snow-level "Super Site"







HHD Paper Highlights the Use of HMT's Snow Level Product

NOAA'S RAPID RESPONSE TO THE HOWARD A. HANSON DAM FLOOD RISK MANAGEMENT CRISIS

BY ALLEN B. WHITE, BRAD COLMAN, GARY M. CARTER, F. MARTIN RALPH, ROBERT S. WEBB, DAVID G. BRANDON, CLARK W. KING, PAUL J. NEIMAN, DANIEL J. GOTTAS, ISIDORA JANKOV, KEITH F. BRILL, YUEJIAN ZHU, KIRBY COOK, HENRY E. BUEHNER, HAROLD OPITZ, DAVID W. REYNOLDS, AND LAWRENCE J. SCHICK

NOAA operations and research personnel joined forces to better predict a possible flood and help calm public fears regarding reduced flood protection from a western Washington dam.

After nearly 50 years of service providing flood risk management for areas near Seattle, the U.S. Army Corps of Engineers (USACE) discovered signs of a potential dam failure at Howard A. Hanson Dam (HHD) after a potent winter storm in early January 2009. This dam safety issue increased the risk of catastrophic flooding in the now highly developed Green River Valley (GRV) downstream. As part of a broad set of actions by local, state, and federal agencies, the National Oceanic and Atmospheric Administration (NOAA) implemented a rapid response effort, coordinated between the National Weather Service (NWS) and the Office of Oceanic and Atmospheric Research (OAR), to enhance services to the communities at risk. These enhancements drew from ideas developed at NWS offices with inputs from regional stakeholders and took advantage of innovations in science and technology from NOAA's Hydrometeorology Testbed (HMT; Ralph et al. 2005a), which has focused on extreme precipitation events over the last several years (http://hmt.noaa.gov). This paper briefly describes the HHD and what happened to it,

AFFILIATIONS: WHITE, RALPH, WEBB, KING, NEIMAN, AND GOTTAS—NOAA/Earth System Research Laboratory/Physical Sciences Division, Boulder, Colorado; COLMAN, COOK, AND BUEHNER—NOAA/National Weather Service/WFO Seattle, Seattle, Washington; CARTER—NOAA/National Weather Service/Office of Hydrologic Development, Silver Spring, Maryland; BRANDON—NOAA/National Weather Service/Western Region Hydrology and Climate Services, Salt Lake City, Utah; JANKOV—Cooperative Institute for Research in the Atmosphere, Colorado State University, Fort Collins, and NOAA/Earth System Research Laboratory/Global Systems Division, Boulder, Colorado; BRILL—NOAA/National Weather Service/Hydrometeorological Prediction Center, Suitland, Maryland; ZHU—NOAA/NWS/National Centers for Environmental Prediction/Environmental Modeling Center, Camp Springs, Maryland; OPITZ—NOAA/National Weather Service/Pacific Northwest RFC, Portland, Oregon; REYNOLDS—NOAA/National Weather Service/WFO San Francisco Bay Area, Monterey, California; SCHICK—U.S. Army Corps of Engineers, Seattle, Washington
CORRESPONDING AUTHOR: Dr. Allen B. White, NOAA Earth System Research Laboratory R/PS2, 325 Broadway, Boulder, CO 80305
E-mail: allen.b.white@noaa.gov

The abstract for this article can be found in this issue, following the table of contents.
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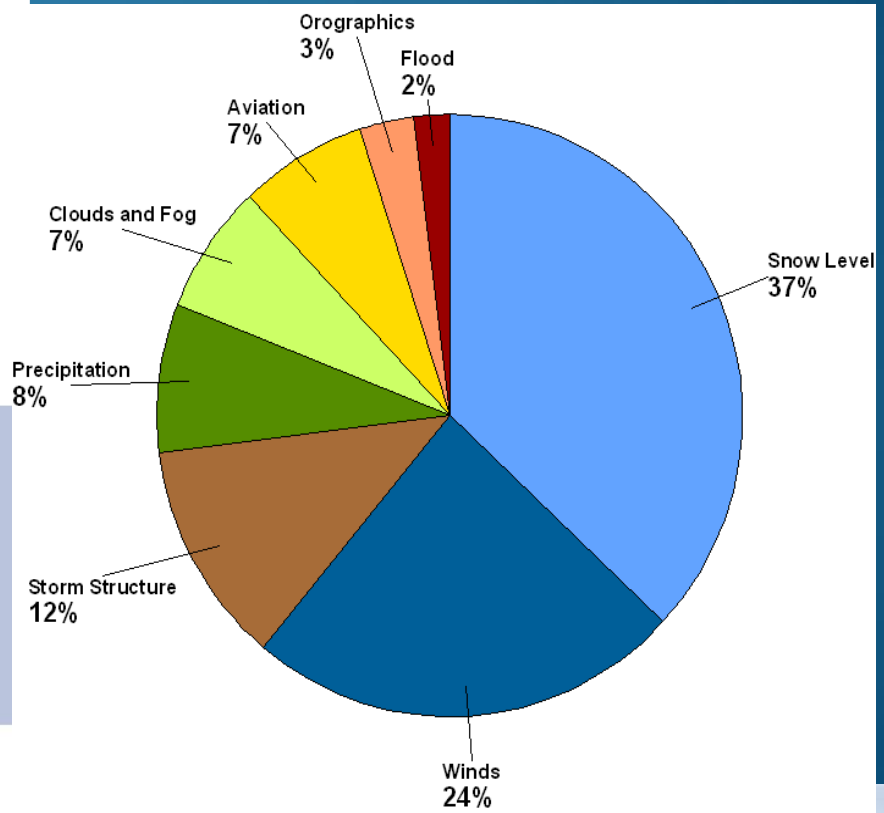
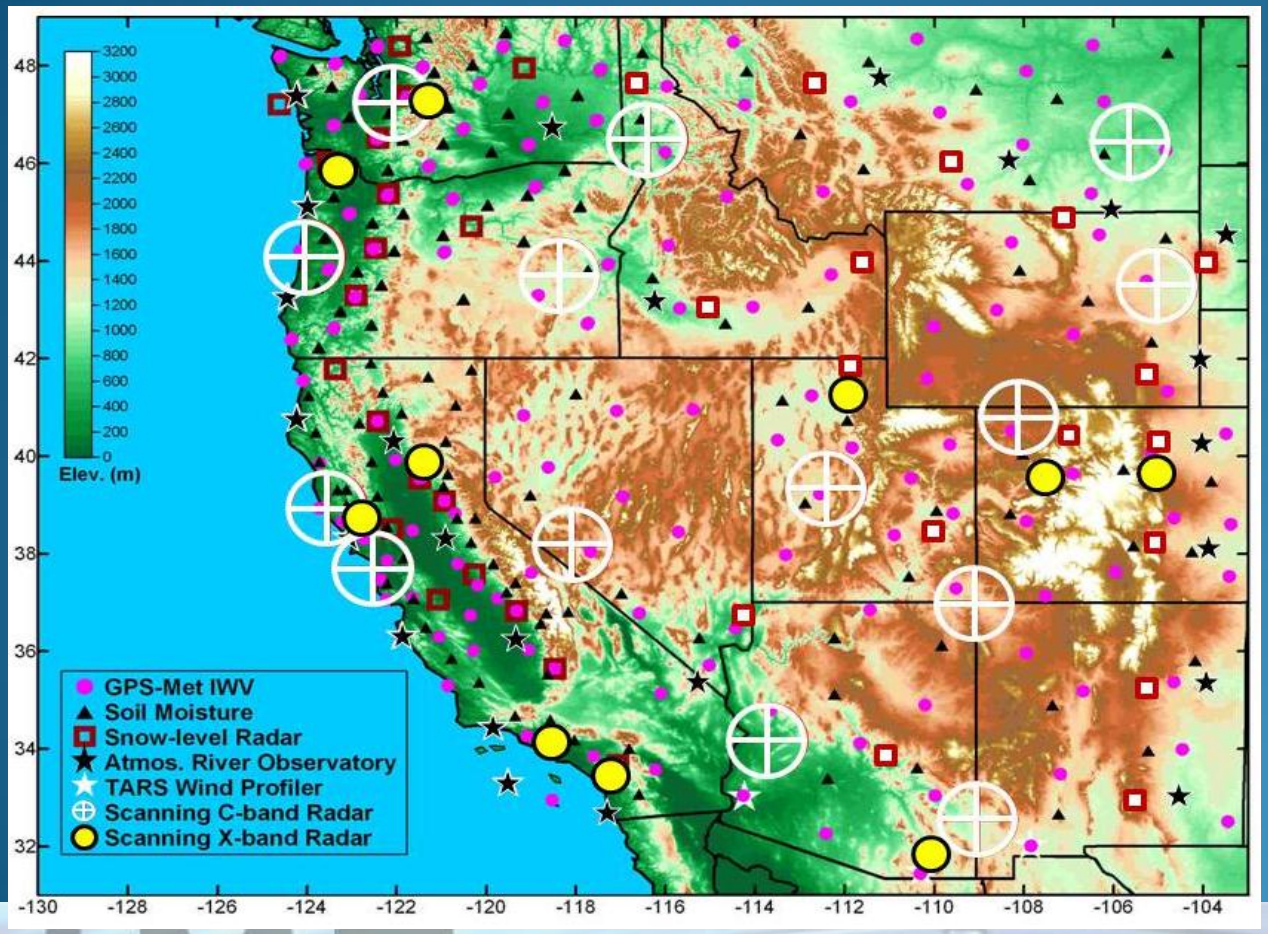
In final form 5 July 2011

Weather forecast applications for which ARO data products were quoted in 59 individual Area Forecast Discussions issued by the Seattle WFO.



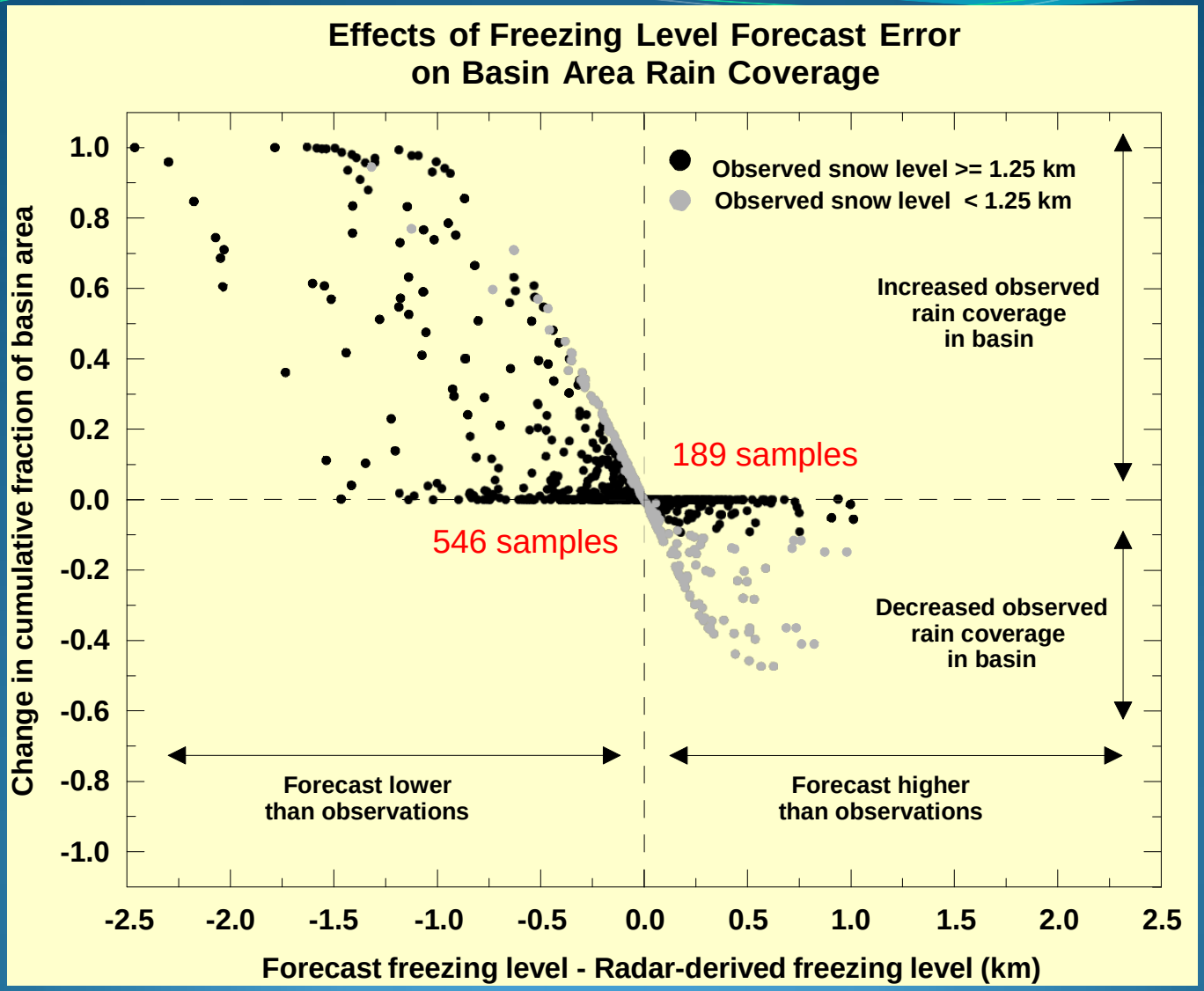
Position #332 Adopted by the Western States Water Council

BE IT FURTHER RESOLVED, that the Western States Water Council supports development of an improved observing system for Western extreme precipitation events, to aid in monitoring, prediction, and climate trend analysis associated with extreme weather events.



Strawman plan calls for ~25 new snow-level radars in addition to the ten snow-level radars being installed in CA as part of the HMT-Legacy Project.

Washington Snow-level Forecast Performance Report



Snow Information: FY13 Plans

- Continued operation and maintenance of HMT snow and precipitation gauge network in the American River Basin
- Expansion of the HMT Legacy Snow-level Radar network in California from seven to ten sites
- New continuous in time freezing-level product using a combination of snow-level observations and numerical model diagnostic fields
- New snow-level model verification display in Google Maps
- Publication on freezing-level forecast performance in Washington
- Evaluation of freezing-level forecasts from HMT ensemble weather forecast model

Questions?